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ABSTRACT

A study of 21 patients with Alzheimer's Disease and 25 with vascular dementia, the two most common forms of dementia, investigated language impairments in the dementia syndrome to see if analysis of language disturbances is helpful in differential diagnosis. Diagnostic assessment included a neurological examination, detailed medical history, screening laboratory tests, an investigation of the cerebrospinal fluid, a Luria-based neuropsychological test battery, analysis of language impairment, electroencephalography, and computerized tomography. Language testing included the Token Test and Short Aphasia Examination. The Alzheimer group, as a whole, had a slightly higher degree of dementia. All the functions tested were impaired in both dementia groups, although the degree of impairment was more severe in all areas in Alzheimer's disease. The language impairment correlated very significantly with the severity of dementia in both groups. It is concluded that different areas of language functions are affected in early Alzheimer's disease and vascular dementia, and in some patients, analysis of language might be helpful in a differential diagnosis of dementia. (MSE)

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LANGUAGE IMPAIRMENT IN ALZHEIMER'S DISEASE AND VASCULAR DEMENTIA

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1. INTRODUCTION

The criteria for dementia include a loss of intellectual abilities of sufficient severity to interfere with social and occupational functioning (DSM-III 1980). The clinical picture is dominated by a failure of memory and judgment and there are often also other disturbances of higher cortical functions such as aphasia, apraxia and agnosia. The main types of dementia are Alzheimer's disease (50 % of all patients with dementia) and vascular dementia (30-40 % of the cases) (Sulkava et al. 1985: 1025-1029).

In previous studies there have been made some observations on disturbances in language functions in dementia. However, the characteristics of these disturbances and the differences between the dementia types are not well known.

Obler and Albert (1981: 385-388) maintain that language disturbance is always present in dementia in a more or less severe form. At early stages deficits may be manifest only by careful testing. Later during the course of dementia the symptoms often resemble aphasias of the Wernicke type.

According to several studies anomia is the most common form of aphasia in demented patients, but not the only one. There exist some studies on naming and fluency (Martin and Fedio 1983: 124-141). That the patient produces only a short word list but succeeds in naming tasks with objects is often considered an indication of dementia. Both naming and word fluency are often impaired and there is a high correlation between them. Errors in naming are mostly semantic.

Semantic processes are more likely to be impaired than phonological or syntactic ones. This indicates that semantic functions are dependent on the integrity of higher cognitive functions (Schwartz et al. 1979: 277-306, Bayles 1982: 265-280).

Language tasks that focus on memory functions, such as story retelling and verbal description, seem to be promising for detecting Alzheimer's disease at its early stages (Bayles and Boone 1982: 210-217).

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The purpose of the present study was to investigate language impairment in the dementia syndrome and to see if an analysis of language disturbances is helpful in a differential diagnosis between Alzheimer's disease and vascular dementia.

2. METHODS

We examined 21 patients with Alzheimer's disease (11 male, 10 female), mean age 66.2 years (range 53 to 76 years), 25 patients with vascular dementia (13 male, 12 female), mean age 65.0 years (range 48 to 80 years). These patients fulfilled the clinical criteria of DSM-III. Other types of dementia included Pick's disease (2), Huntington's disease (2), Hakola's disease (2), and vitamin B12 deficiency (1). The diagnostic assessment included a neurological examination, detailed medical history, screening laboratory tests, an investigation of the cerebrospinal fluid, a Luria-based neuropsychological test battery, an analysis of language impairment, EEG and CT. Severity of dementia was scored from 0 to 3 according to the tests of orientation, memory and judgment (0 = normal, 3 = very severe dementia).

In the investigation of language we used the Token Test and the Short Aphasia Examination by Maire Lempinen and Sinikka Söderholm. The Short Aphasia Examination consists of seven tests: orientation, receptive abilities, expressive abilities, reading, writing, calculation and motor functions of speech organs. Altogether there are 37 items. The items are selected to test primary language functions and different levels of communication. The results are scored from 0 to 3 in each category. Zero means normal language functions and 3 a very severe impairment.

3. RESULTS

The mean scores for the severity of dementia in the different groups were as follows: Alzheimer's disease 1.85 (range 0.46 to 2.89), vascular dementia 1.45 (range 0.49-2.40) and other types of dementia 1.51 (range 0.50 to 2.96). Thus the degree of dementia in the Alzheimer group was slightly higher than in the other groups.

3.1. Language impairment

Here we report our main findings on language functions in Alzheimer's disease and vascular dementia. The mean scores for language impairment in these groups in receptive speech (rec), expressive speech (exp), dyslexia (dysl), dysgraphia (dysg) and dyscalculia (dysc) are given in the Table.

Table. Language functions in Alzheimer's disease and vascular dementia.

	rec	exp	dysl	dysg	dysc
Alzheimer	1.08	1.28	1.20	1.39	1.53
Vascular	0.64	0.96	1.00	1.20	1.25

All the functions tested were impaired both in Alzheimer's disease and vascular dementia, although the degree of impairment was more severe in all areas in Alzheimer's disease. The language impairment correlated very significantly with the severity of dementia both in Alzheimer's disease ($r = 0.68$, $p < 0.001$) and vascular dementia ($r = 0.78$, $p < 0.001$).

In Alzheimer's disease and vascular dementia with severe cognitive decline there was a severe impairment of all language functions. Patients with severe Alzheimer's disease had difficulties even in the recognition of words and sentences. In early Alzheimer's disease the degree of language impairment was less prominent when compared to the degree of dementia.

Although language impairment could be found also at the early stages of dementia in both groups, there were some differences. The receptive abilities (auditive items, memory, semantics and information) were more impaired in mild Alzheimer's disease than vascular dementia. In expressive abilities word fluency was impaired in both groups from the beginning, narrative speech was more impaired in vascular dementia and repetition of sentences was worse in Alzheimer's disease.

4. CONCLUSIONS

There is a progressive language impairment both in Alzheimer's disease and vascular dementia. It is correlated with the severity of dementia. Different areas of

language functions are affected in early Alzheimer's disease and vascular dementia. In some patients, an analysis of their language might be helpful in a differential diagnosis of dementias. The results of the present study are, however, preliminary. Further studies should evaluate differences in language functions also between normal aging and dementia as well as between pure aphasia and dementia.

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